1982

Product Safety Information

METHYLENE CHLORIDE

(Dichloromethane)

I. PHYSICAL AND CHEMICAL PROPERTIES

Formula: CH_2Cl_2
Formula Weight: 84.94
Physical State: Liquid (20°C-14.7 psia)
Usual Commercial Form: Liquid
Specific Gravity: 1.326 @ 20°C (Water: 1.0)
Vapor Density: 2.93 (air: 1.0)
Boiling Point (°C): 40
Melting Point (°C): -96.7
Color: Water white
Odor: Pleasant, aromatic

Auto-ignition temp. (°C): 662.2
Vapor Pressure (mm Hg)
0°C: 140
21.1°C: 340
37.7°C: 700
Water Miscibility: Immiscible
pH (water extract): Slightly Alkaline
Percent Volatile by Volume: essentially 100%
Water Solubility: 1.96g/100g H_2O@20°C

II. CHEMICAL REACTIVITY

Not highly reactive: On contact with fire or hot surfaces decomposes to HCl and phosgene.

Alkali metals act as powerful detonator.

Explosive in pure oxygen—Range: Lower Limit-15.5%
Upper Limit-66.4%

III. STABILITY

A stable product—does neither polymerize nor spontaneously decompose. It does decompose in moisture and heat.

IV. FIRE HAZARD

Methylene chloride is practically non-flammable in air at atmospheric pressure and will not support combustion. However, it can form explosive mixtures with oxygen under pressure.

V. FIREFIGHTING TECHNIQUES

Self-contained breathing apparatus should be used by those fighting fires where methylene chloride is present.

VI. HEALTH HAZARDS

The primary hazard associated with methylene chloride is loss of consciousness following inhalation of the vapor. Exposure to high vapor concentrations sufficient to cause anesthesia may also cause eye and respiratory tract irritation. Direct contact with the liquid can cause skin and eye irritation.

1. Ingestion

Methylene chloride is assumed to be poisonous if taken by mouth.

2. Eye Effects

Contact of the vapors or splashes of liquid into the eyes will cause smarting, conjunctivitis and irritation.

3. Dermal Effects

A single direct contact of the liquid with the skin results in minor irritation. Sustained or intermittent skin contact of the liquid by clothing or other materials may result in skin burns or dermatitis.

4. Inhalation

The chief hazard of methylene chloride is loss of consciousness following inhalation of the vapor. Early acute symptoms of inhaling the vapor are lightheadedness, mental confusion, nausea, vomiting and headache. Continued exposure may result in increasing dizziness and staggering, progressing to loss of consciousness. Recovery is usually rapid and complete but intense and/or prolonged exposure may be fatal. High vapor concentrations sufficient to cause anesthesia may also cause eye and respiratory tract irritation.

Repeated exposures to concentrations above the threshold limit may result in repeated attacks of acute symptoms. Cumulative effects have not been observed from daily exposures to concentrations below the threshold limit. The risk of liver and kidney injury is low, although this could occur after repeated and prolonged exposures to concentrations which cause acute symptoms.

5. Threshold Limit Value

The American Conference of Governmental Industrial Hygienists has assigned a threshold limit value of 200

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ppm (approximately 720 milligrams per cubic meter) by volume in air as the maximum allowable concentration of methylene chloride as a time-weighted average for a 7- to 8-hour workday.

6. Warning Properties

The odor, irritation or symptoms produced by inhalation of methylene chloride vapor cannot be relied upon to give adequate warning of unsafe concentrations.

VII. FIRST AID

In the event of injury resulting from over-exposure, remove the patient from source of contamination and apply the recommended first aid procedures. Respiration is of prime importance. If breathing has ceased, mouth-to-mouth artificial respiration should be performed. Never give anything by mouth to an unconscious person. Medical attention should be obtained as soon as possible after injury, even if the injury appears slight. The physician should be given a detailed account of the incident.

1. Ingestion

Obtain medical attention as soon as possible.

If the patient has swallowed methylene chloride and is conscious, induce vomiting by giving warm salty water (2 tablespoons of table salt to a pint of water) or warm soapy water. If this measure is unsuccessful, vomiting may be induced by tickling the back of the patient's throat with the finger. Vomiting should be encouraged about three times or until the vomitus is clear. Additional water may be given to wash out the stomach.

If the patient is unconscious do not give anything but ensure there is no obstruction to breathing (patient's tongue should be kept forward and false teeth removed). The patient will be less likely to breathe in vomitus if placed in a face down position.

2. Eye Contact

Immediately flush the eyes with large quantities of running water for a minimum of 15 minutes. Hold the eyelids apart during the irrigation to ensure flushing of the entire surface of the eye and lids with water. Obtain medical attention as soon as possible. Oils or ointments should not be used unless directed by a physician. Continue the irrigations for an additional 15 minutes if the physician is not available.

3. Skin Contact

Immediately flush affected areas with water. Remove contaminated clothing under the shower. Continue washing with water—do not attempt to neutralize with chemical agents. Obtain medical attention unless burn is minor.

4. Inhalation

Remove from contaminated atmosphere.

If breathing has ceased, start mouth-to-mouth artificial respiration. Oxygen, if available, should only be administered by an experienced person when authorized by a physician. Keep patient warm and comfortable.

Call a physician immediately.

VIII. PRECAUTIONS FOR NORMAL USE

A minor spill is defined as a small quantity which can be handled routinely considering the physical and hazardous properties of the product as well as the location of the spill.

Spills should be cleaned up immediately. The immediate area around the spill should be evacuated. The area should be immediately ventilated. The person cleaning the spill should put on proper protective equipment, rubber gloves, rubber boots, chemical goggles, self-contained breathing equipment. In well-ventilated areas, a canister type mask, suitable for perchloroethylene can be used. The material should be mopped, the mop should be wrung into a pail, and the unusable material from the spill should be stored in a suitable container. The unusable material can be passed on to a chlorinated hydrocarbons reclaimer. This material vaporizes very quickly. Very minor spills may be handled by adequate ventilation only.

Spills which are not considered to be minor, which are considered to be an emergency, must be handled according to a predetermined plan. For assistance in developing such a plan, contact Stauffer's Technical Service Department.

IX. RECOMMENDED SAFETY EQUIPMENT

Rubber gloves.
Chemical goggles or face shield.
Approved U.S. Bureau of Mines respirator for methylene chloride.

X. CORROSIVITY TO MATERIALS OF CONSTRUCTION

Not corrosive at normal atmospheric temperatures when dry to common materials such as iron, copper; reacts with aluminum and titanium. In contact with water particularly at elevated temperatures it is corrosive.

XI. STORAGE REQUIREMENTS

Bulk methylene chloride should be stored in steel pressure tanks. Provisions should be made to prevent moisture from entering the tank. Drums should be stored in a cool, dry, ventilated area.

XII. DISPOSAL OF UNUSED MATERIAL

For assistance in disposing of unused material contact Stauffer's Technical Service Department.

XIII. DISPOSAL OF CONTAINER

Drums are non-returnable. They should be drained thoroughly before disposal. Purging with air will dissipate residual methylene chloride.

XIV. REFERENCES

"Methylene Chloride," Manufacturing Chemists Association, Inc., SD-86 (1962).